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| Name: | Date: |
| Course/Subject: Keystone Algebra II | Team: Math Department |
| Topic: II Non-Linear Expressions | School District: Blue Mountain |

Key Learning: Simplifying and evaluating exponential and logarithmic expressions.

Unit Essential Question: How are the properties of exponents and logarithmic expressions used to simplify and evaluate?

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| Concept: Review of positive exponents. | Concept: Negative and zero exponents. | Concept: Rational exponents. |
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| Lesson Essential Questions:   * How does an exponent affect a number? * Error Analysis: rules for exponents and the rules for multiplication. (ET) | Lesson Essential Questions:   * How do the properties change when the exponent is negative or zero? * Show with a pattern why all numbers with a zero exponent equals “1”. (ET) | Lesson Essential Questions:   * How are rational exponents simplified? * How do rational exponents relate to roots? (ET) |
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| Vocabulary:   * exponent * base * exponential form * factor form * power term | Vocabulary:   * negative exponent * zero exponent | Vocabulary:   * rational number * rational exponent |
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| Additional Information/Resources: We will be using the graphing calculator to explore various functions and expression. | | |

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| Concept: Applications of various exponent types. | Concept: Simplify and evaluate expressions involving exponents. | Concept: Simplify and evaluate logarithmic expressions. | Concept: Factoring polynomials | Concept: Simplify rational algebraic expressions. |
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| Lesson Essential Questions:   * How are exponents used in the real world? * How are negative exponents used in scientific notation? (ET) | Lesson Essential Questions:   * How are the properties of exponents used to simplify and evaluate expressions? * Error Analysis: involving properties of exponents. (ET) | Lesson Essential Questions:   * How are logarithmic expressions simplified and evaluated? * What is the relationship between a logarithmic expression and exponential expression? (ET) | Lesson Essential Questions:   * What are the different types of factoring? * How can we apply the different types of factoring? (ET) | Lesson Essential Questions:   * How do we use the rules of factoring to simplify rational algebraic expressions? |
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| Vocabulary:   * scientific notation | Vocabulary:   * powers of powers * powers of product * multiplication of exponents | Vocabulary:   * logarithm * base | Vocabulary:   * trinomial * binomial * difference of two squares * GCF * grouping * perfect squares   trinomial | Vocabulary:   * rational expression |

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| Concept: Operations with rational algebraic expressions. | Concept: Solving rational equations. | Concept: | Concept: | Concept: |
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| Lesson Essential Questions:   * What are the necessary steps in adding, subtracting, multiplying, and dividing rational expressions? (ET) | Lesson Essential Questions:   * How are rational equations solved? * How are rational equations applied to real-life problems? (ET) | Lesson Essential Questions: | Lesson Essential Questions: | Lesson Essential Questions: |
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| Vocabulary:   * least common denominator * complex fraction * least common multiple | Vocabulary:   * domain restrictions | Vocabulary: | Vocabulary: | Vocabulary: |